

Figure 1a

T.010302-6 T.010302-6

FIG. 1b

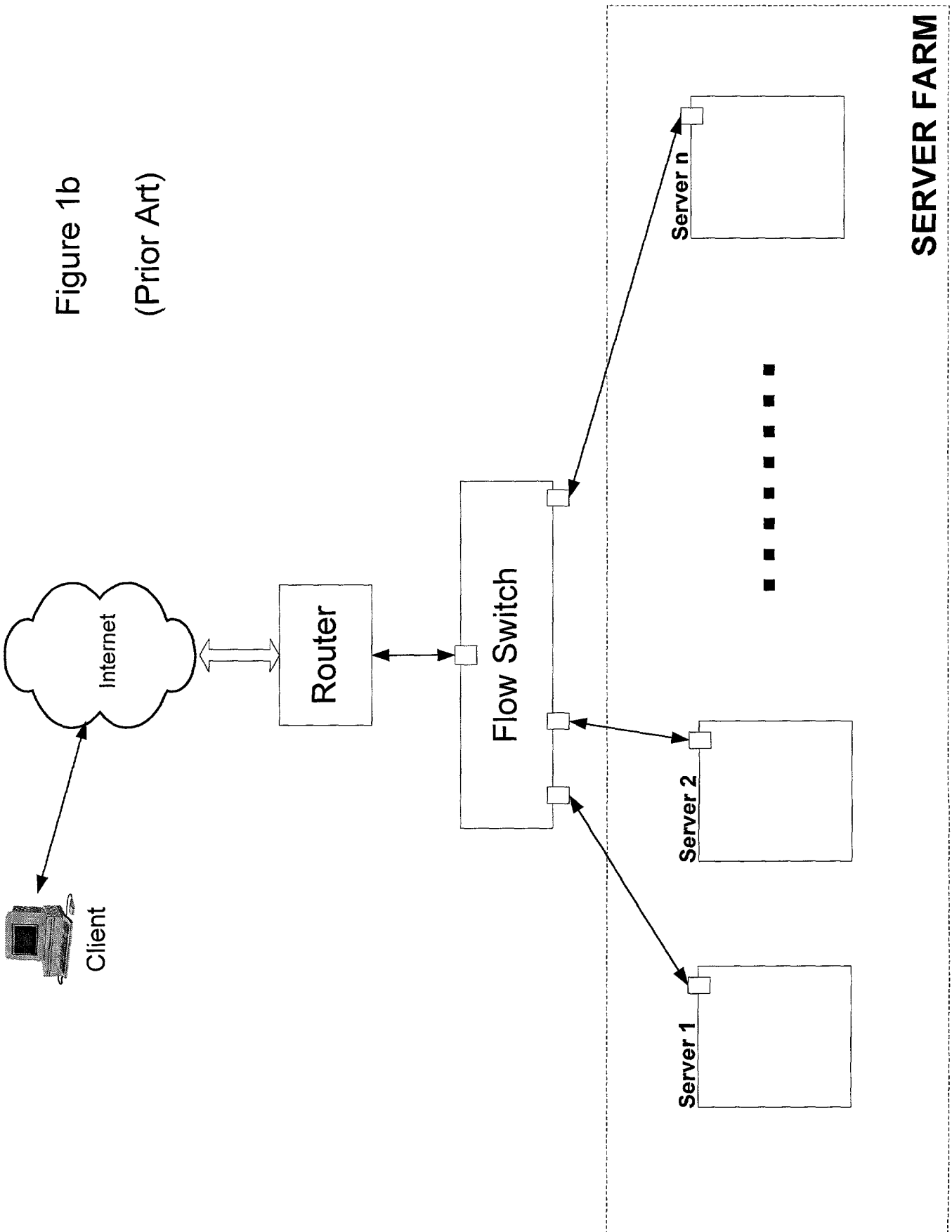


Figure 1b  
(Prior Art)

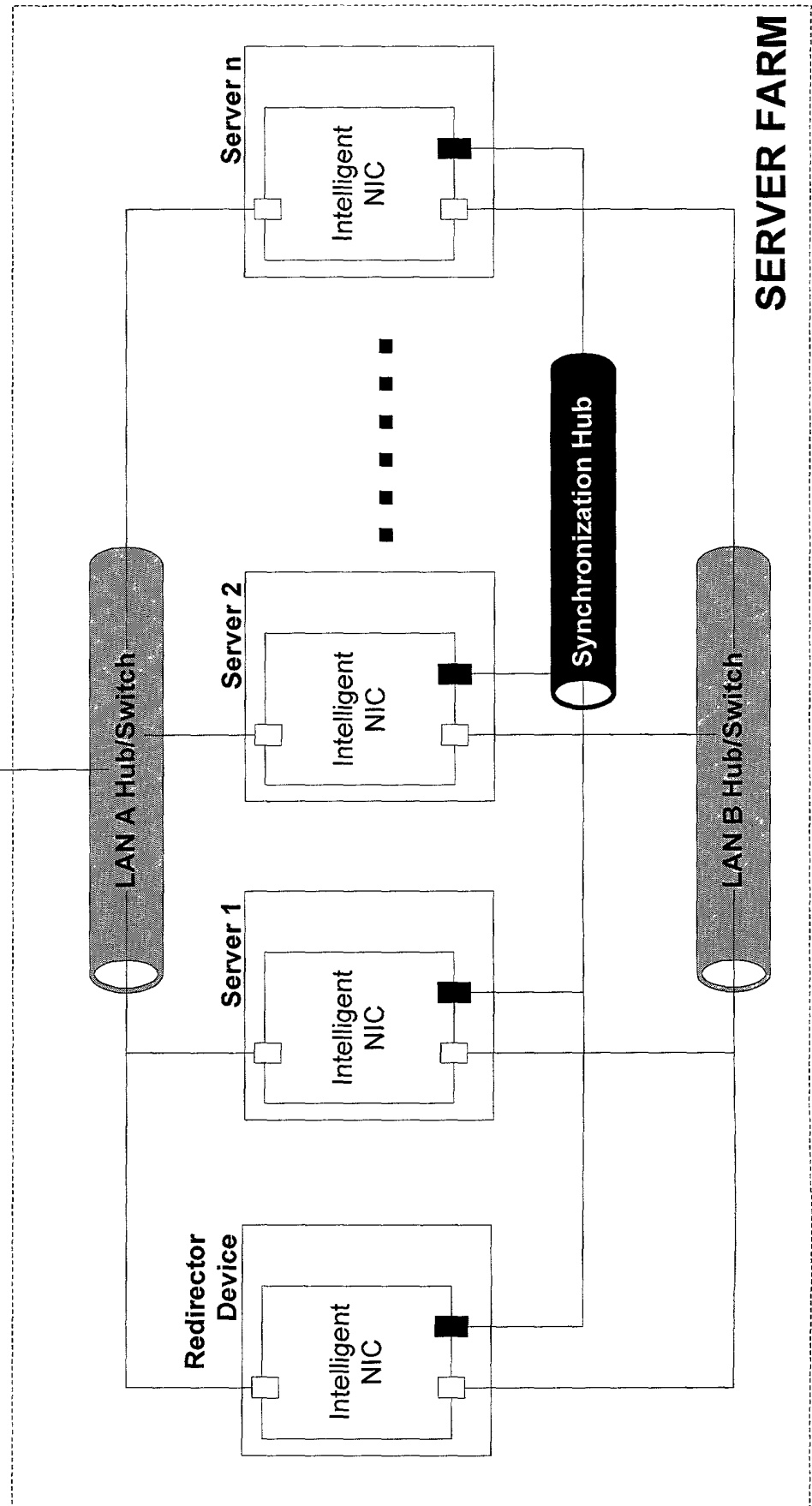
“FOIA b 7(D)” 6/10/2013 4:35 PM

Internet Connection to ISP

WAN Link

Router

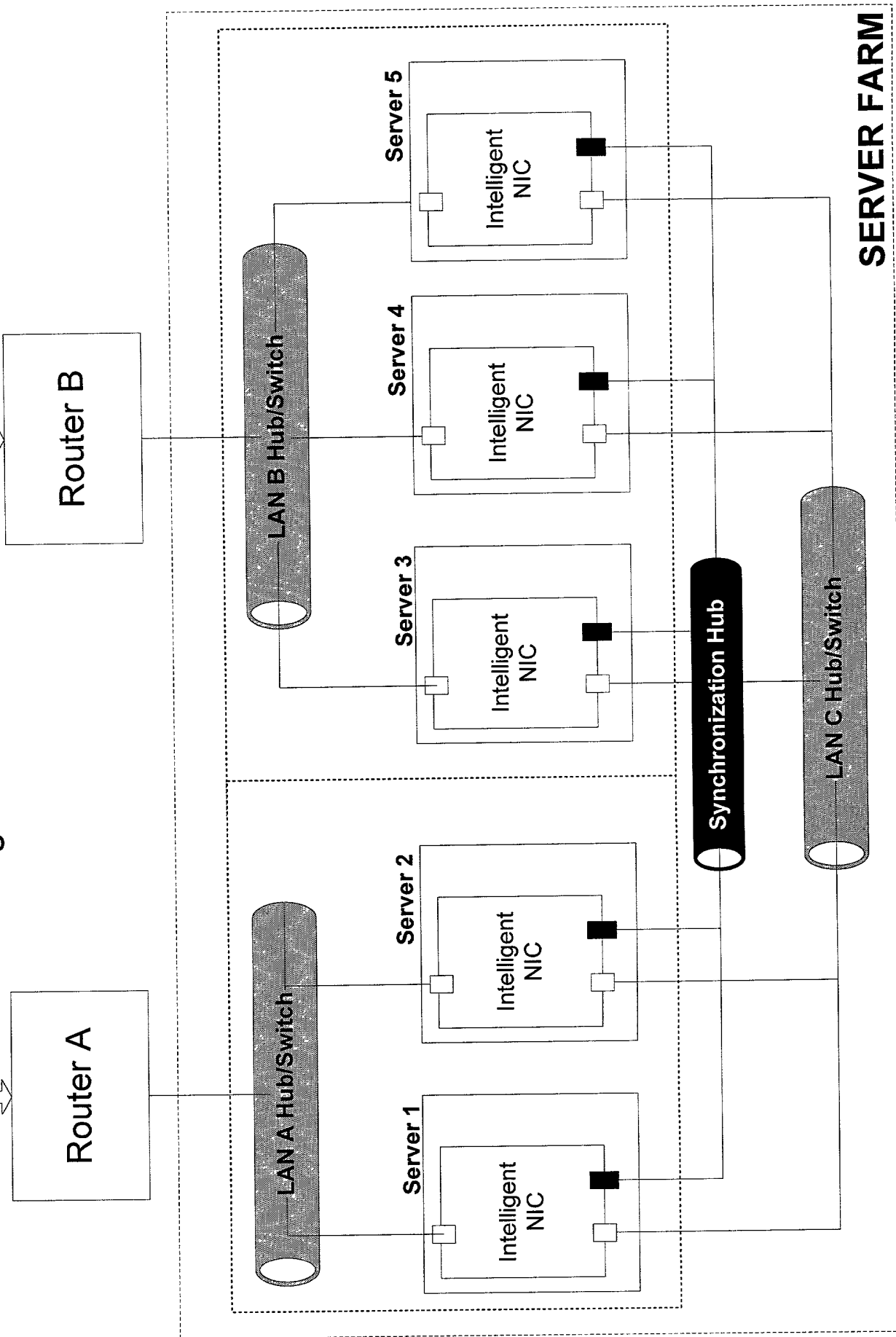
Figure 2a



Internet Connection (e.g., ISP1)

Internet Connection (e.g., ISP2)

Figure 2b



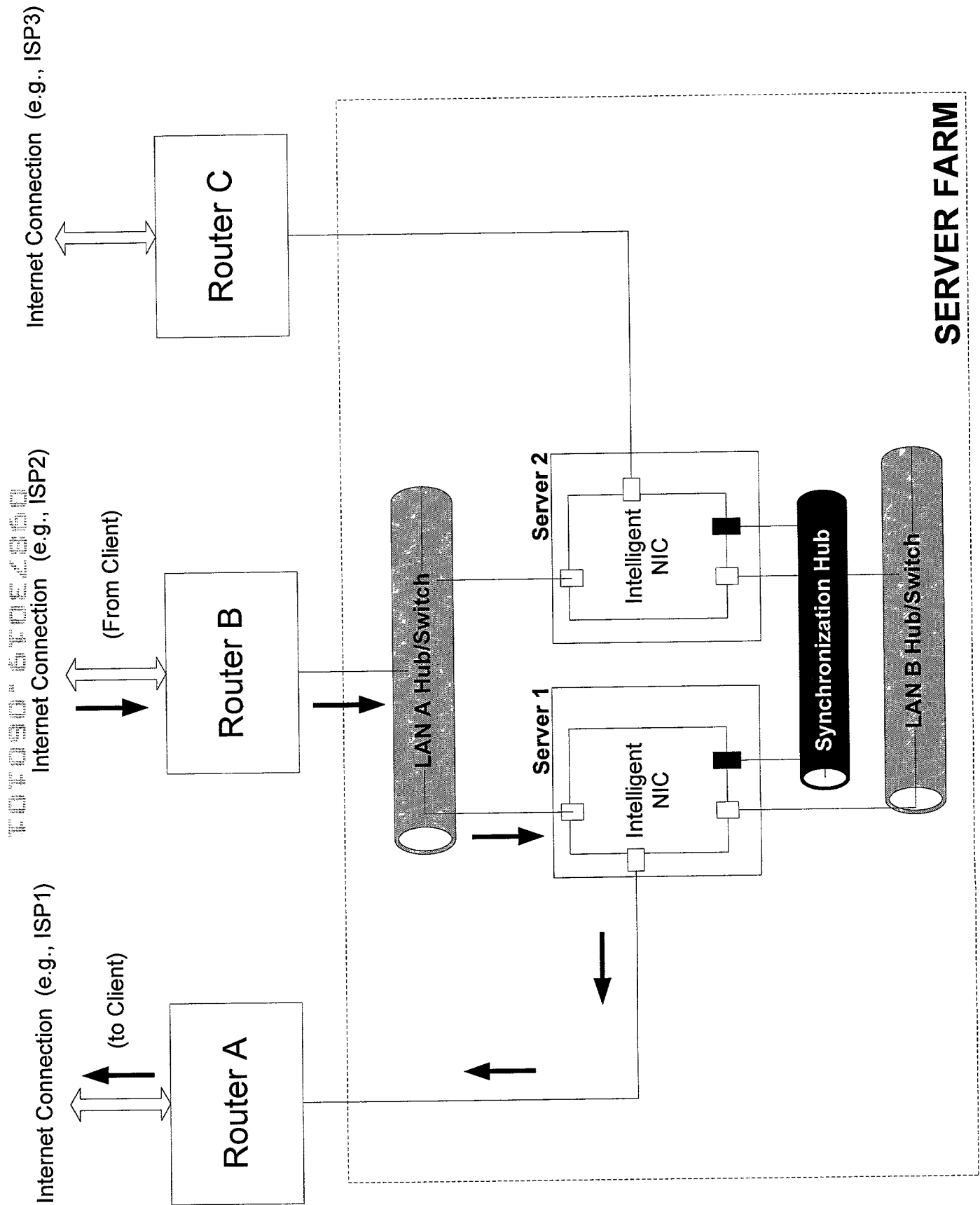
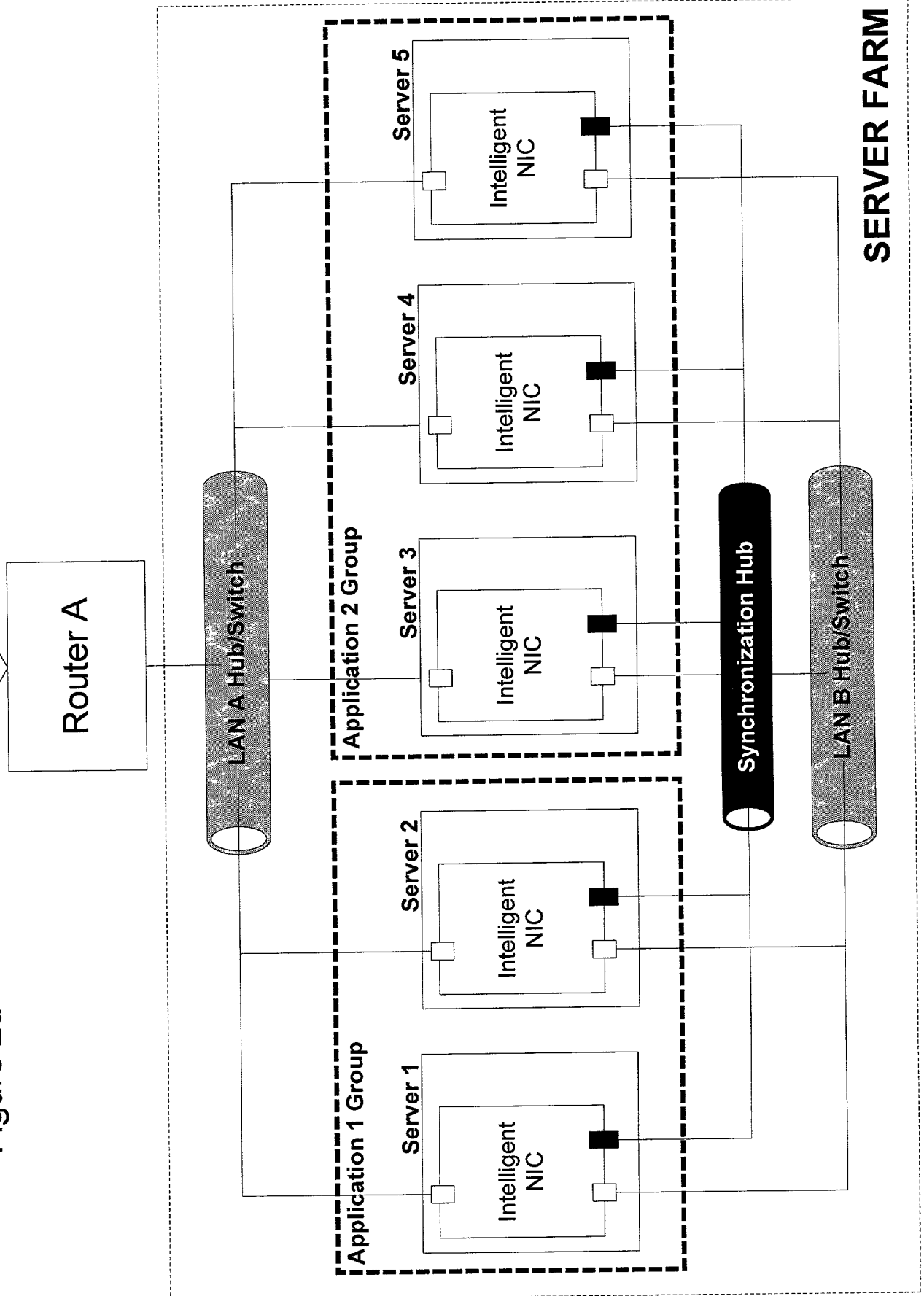


Figure 2c

Internet Connection

Figure 2d



SERVER FARM

TOP SECRET

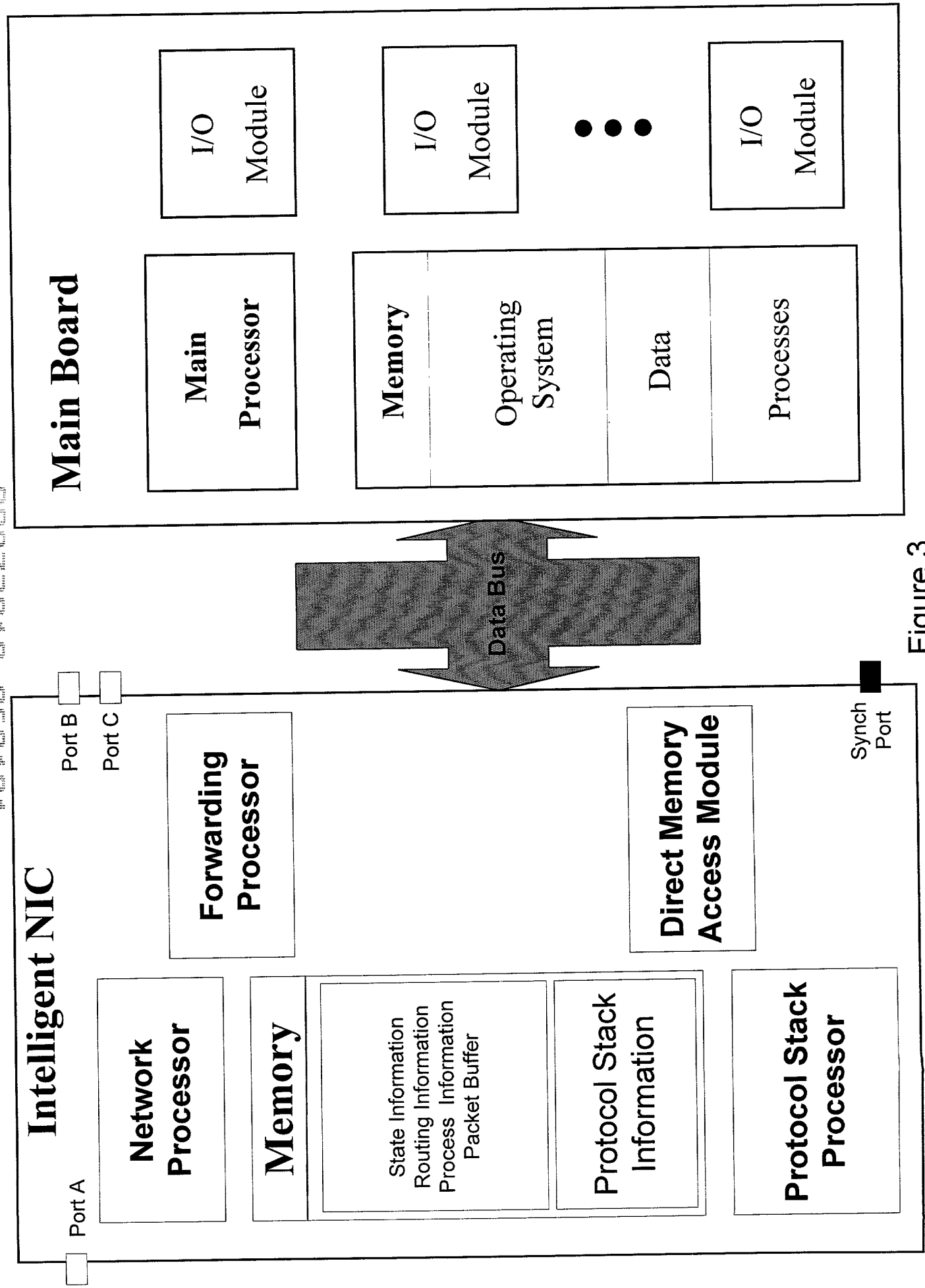


Figure 3

Internet Connection

Client Request to Server 1:  
123.123.123.1

Figure 4a

Router A

LAN A Hub/Switch

Server 1: IP 123.123.123.1

Intelligent  
NIC

IP 222.222.222.1

Server 2: IP 123.123.123.3

Intelligent  
NIC

IP 222.222.222.3

Synchronization Hub

LAN B Hub/Switch

SERVER FARM

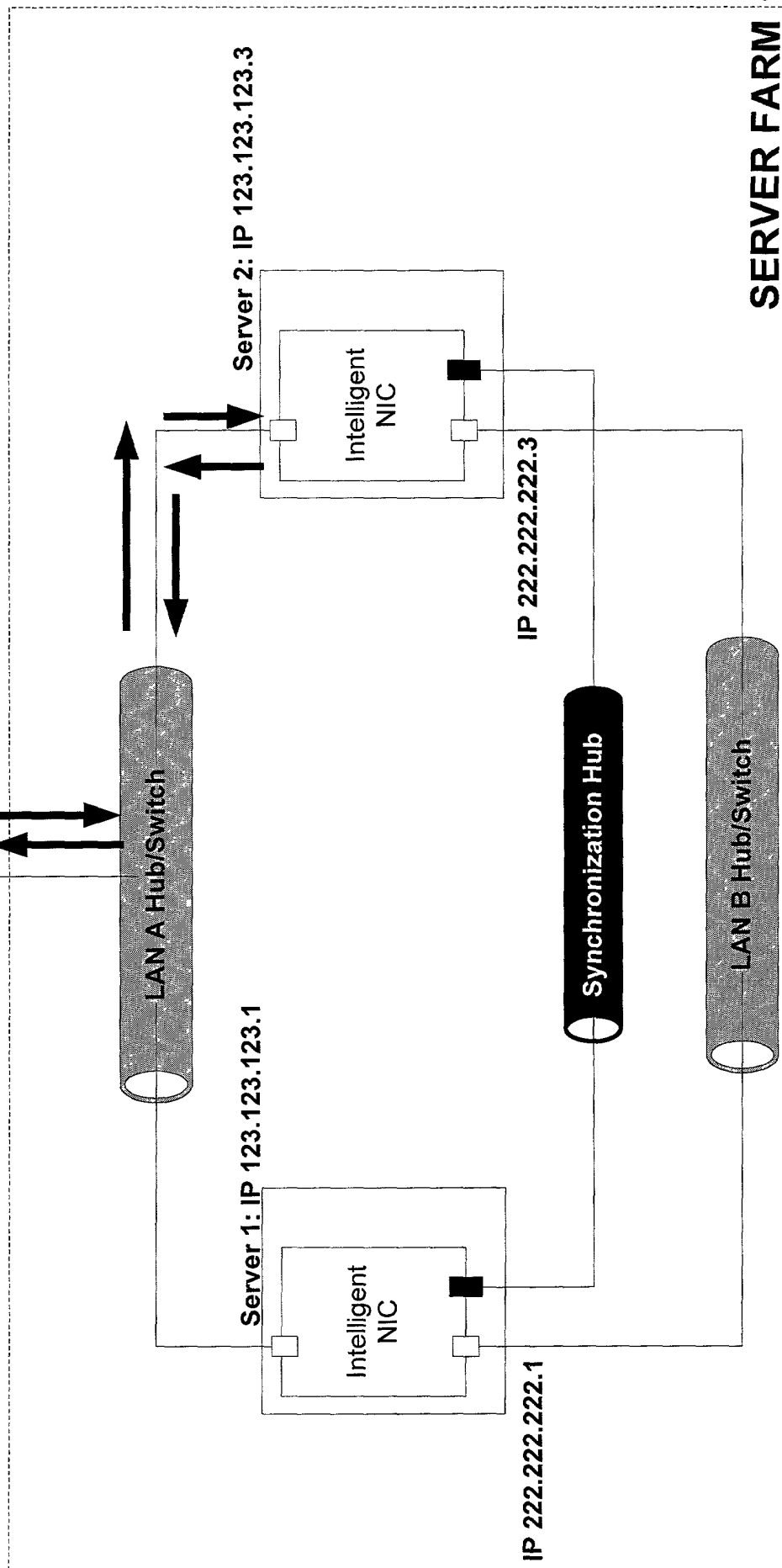


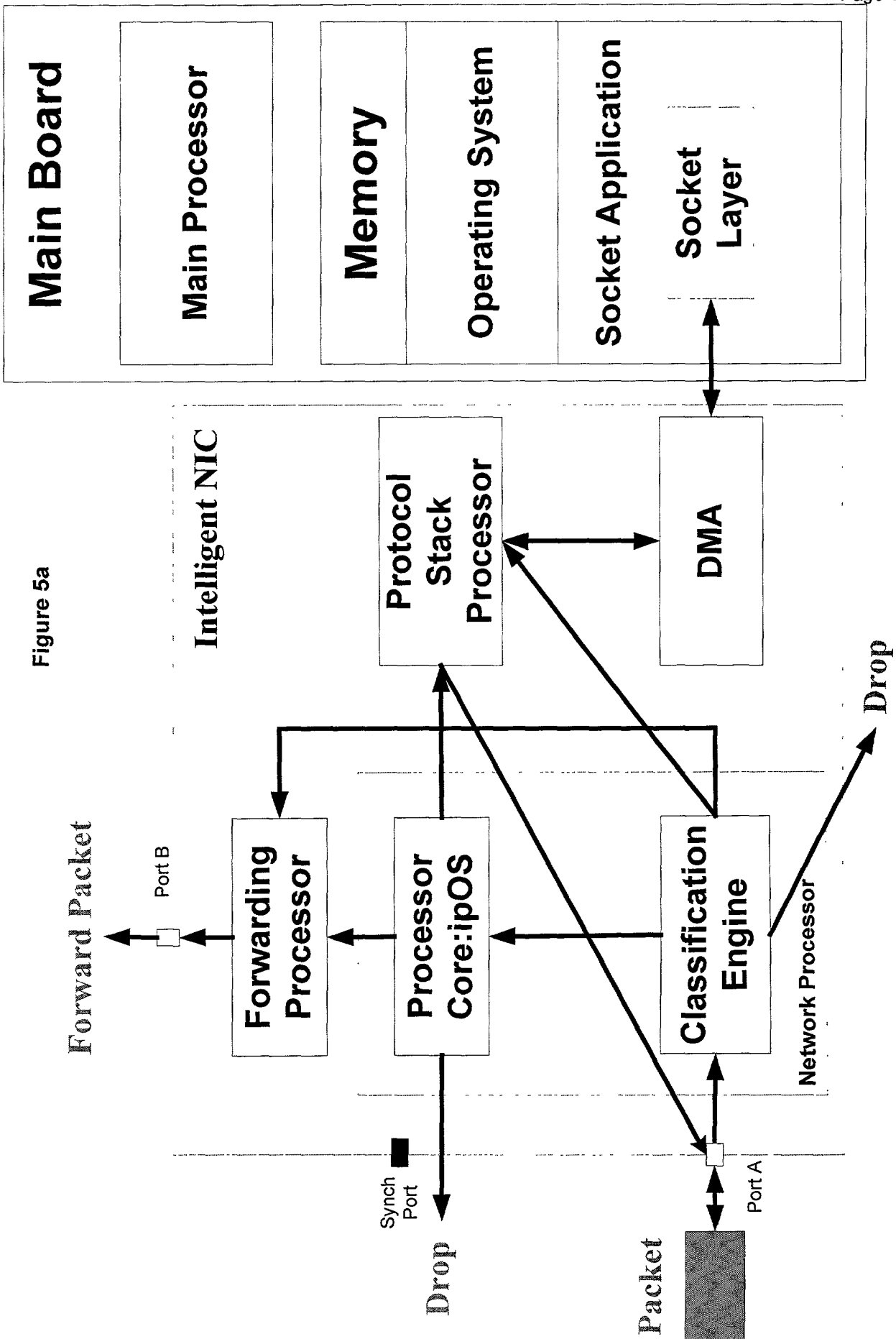
FOIA b 7 - DEFO

Internet Connection

Client Request to Server 2:  
123.123.123.3

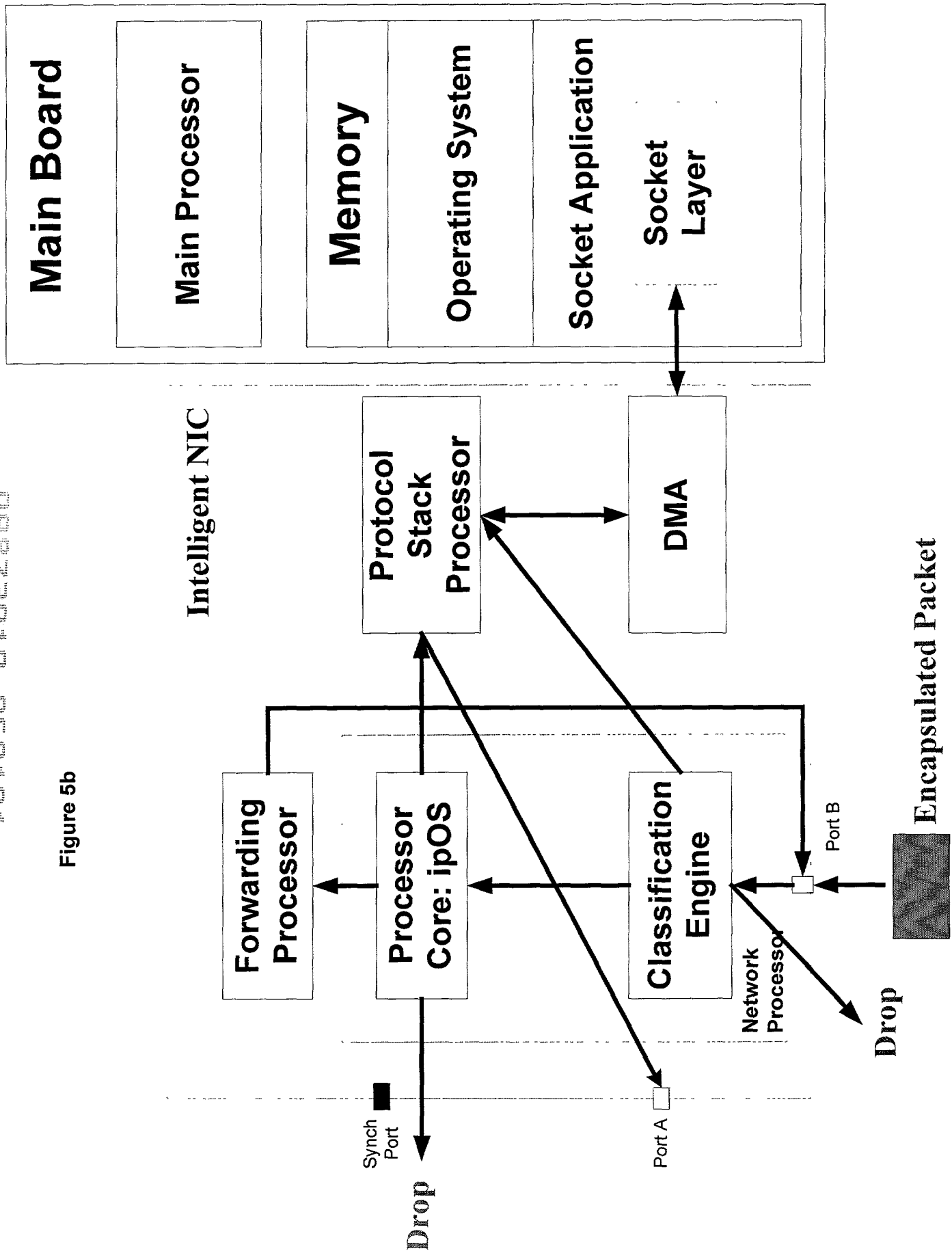
Figure 4b





FOIA b 5 - DEFOI

Figure 5b



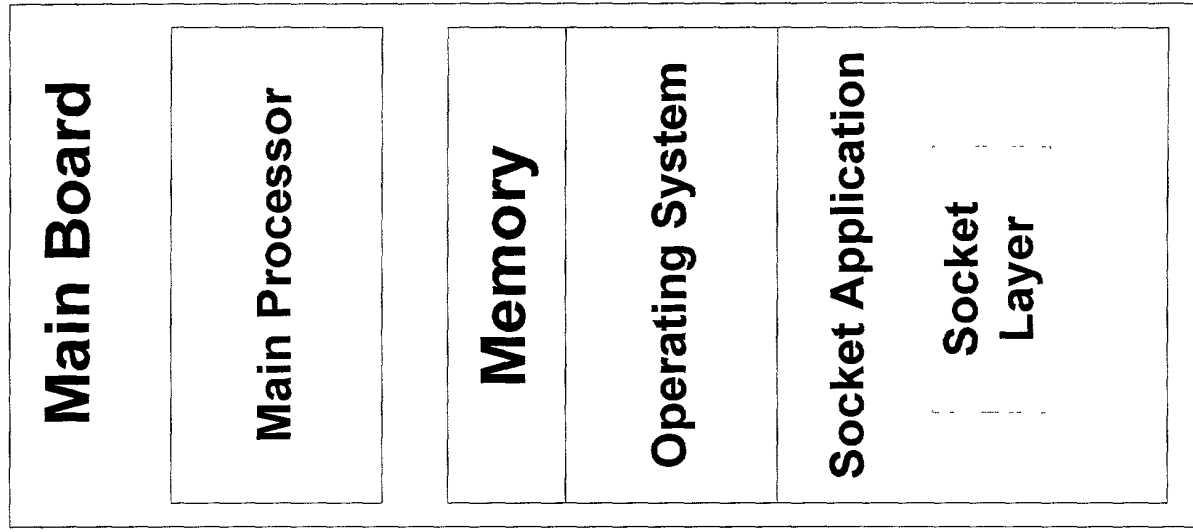
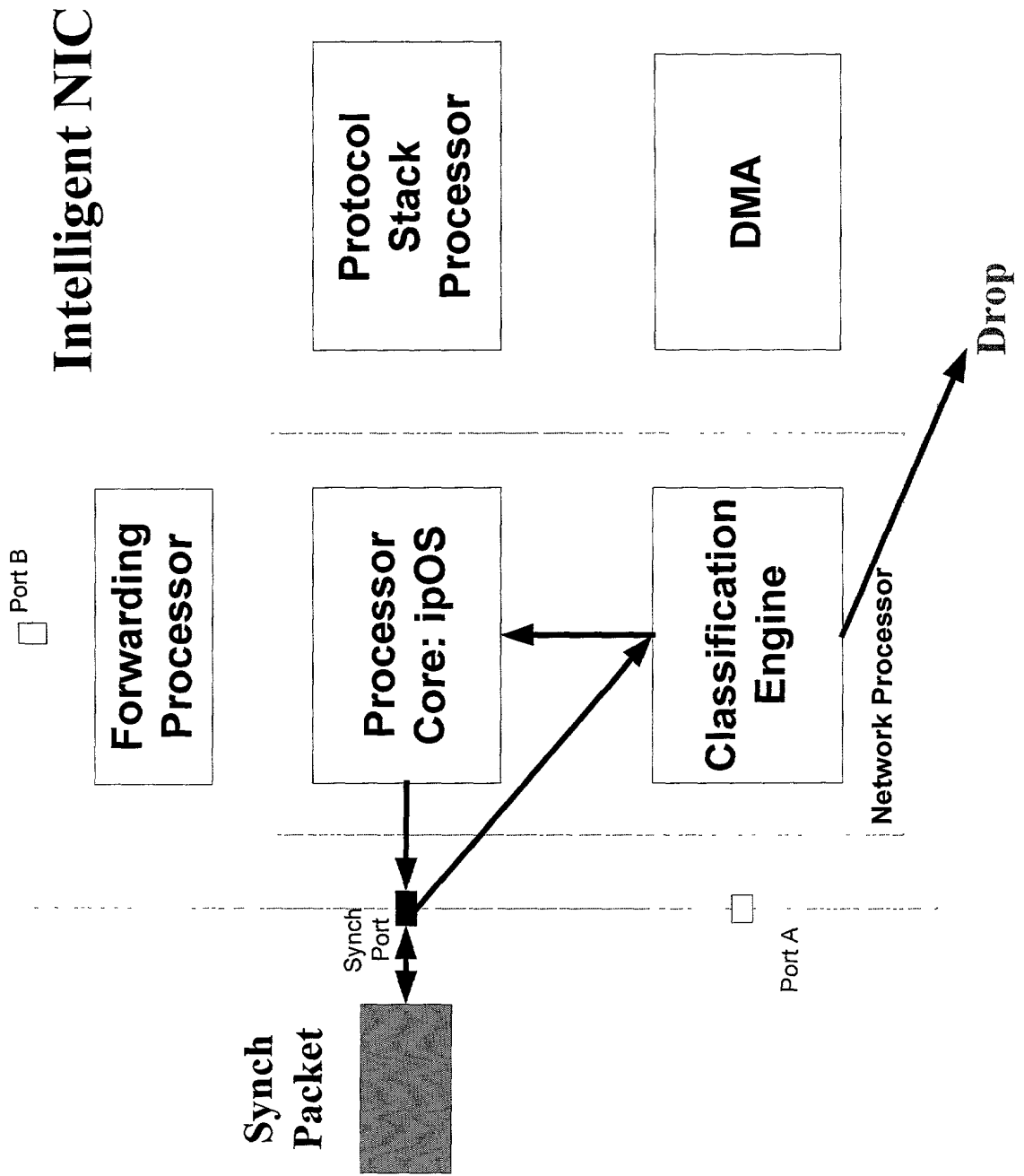


Figure 5c



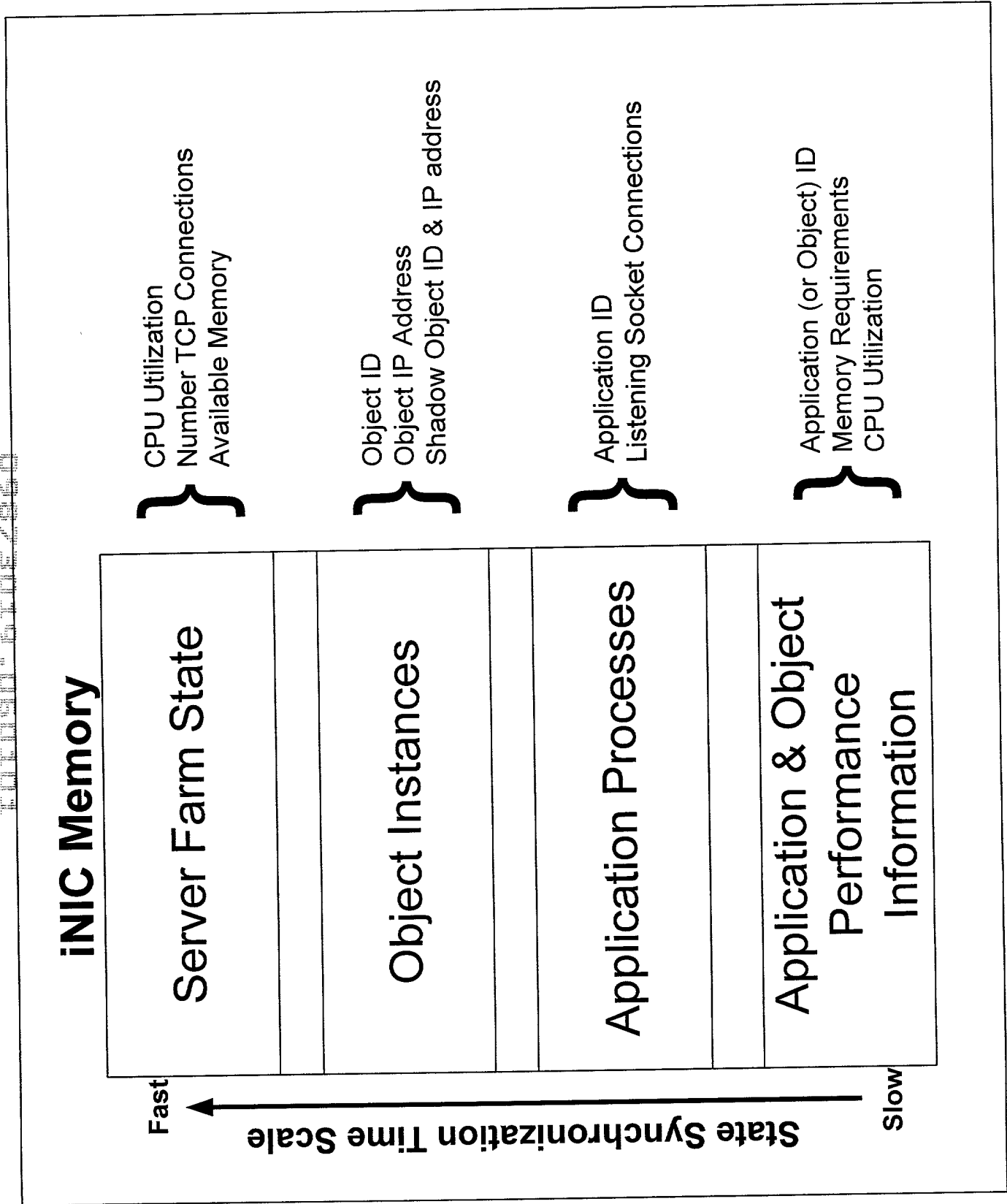
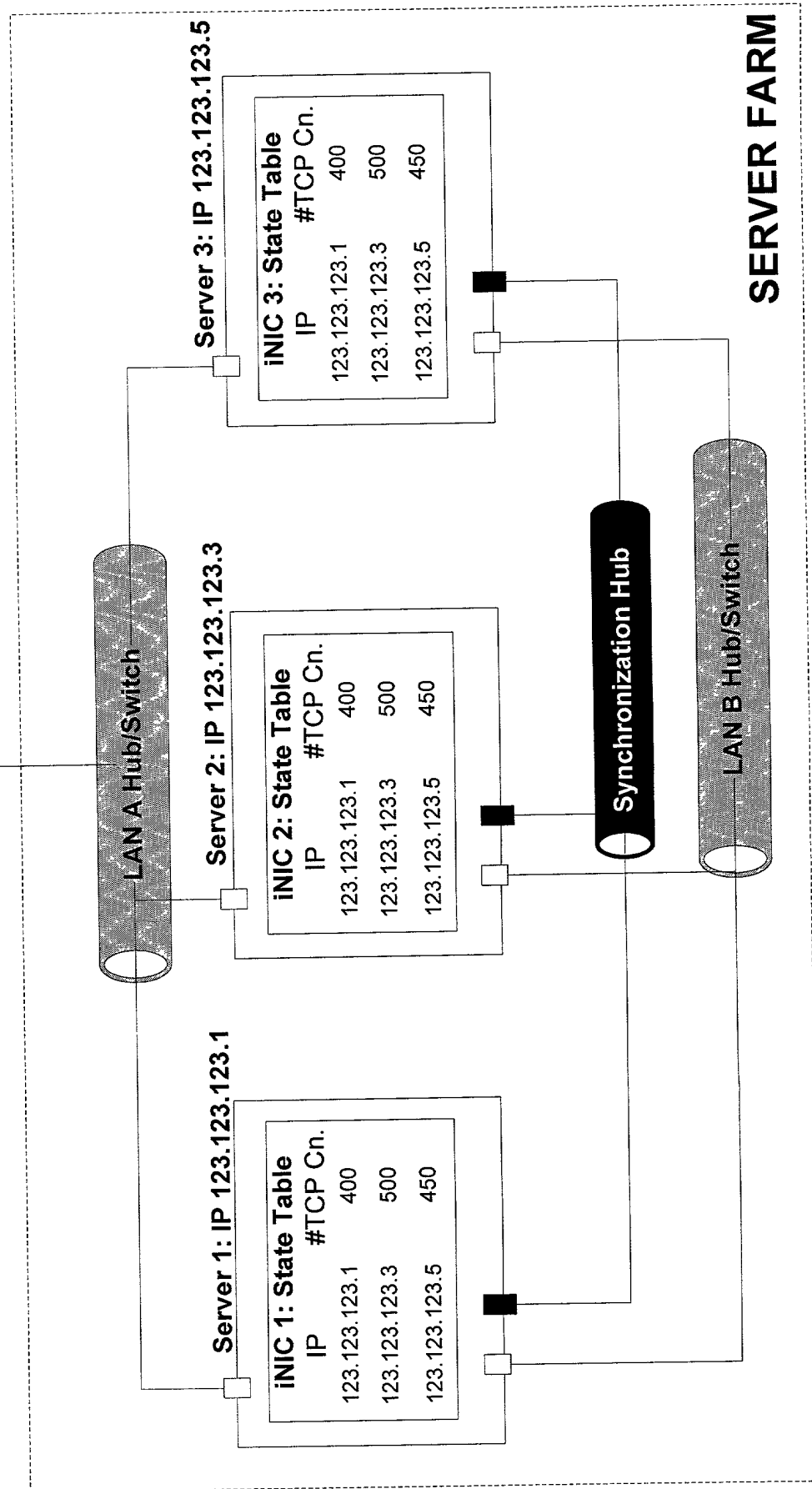


Figure 6

Internet Connection

Client Request to Server 1:  
123.123.123.1

Figure 7



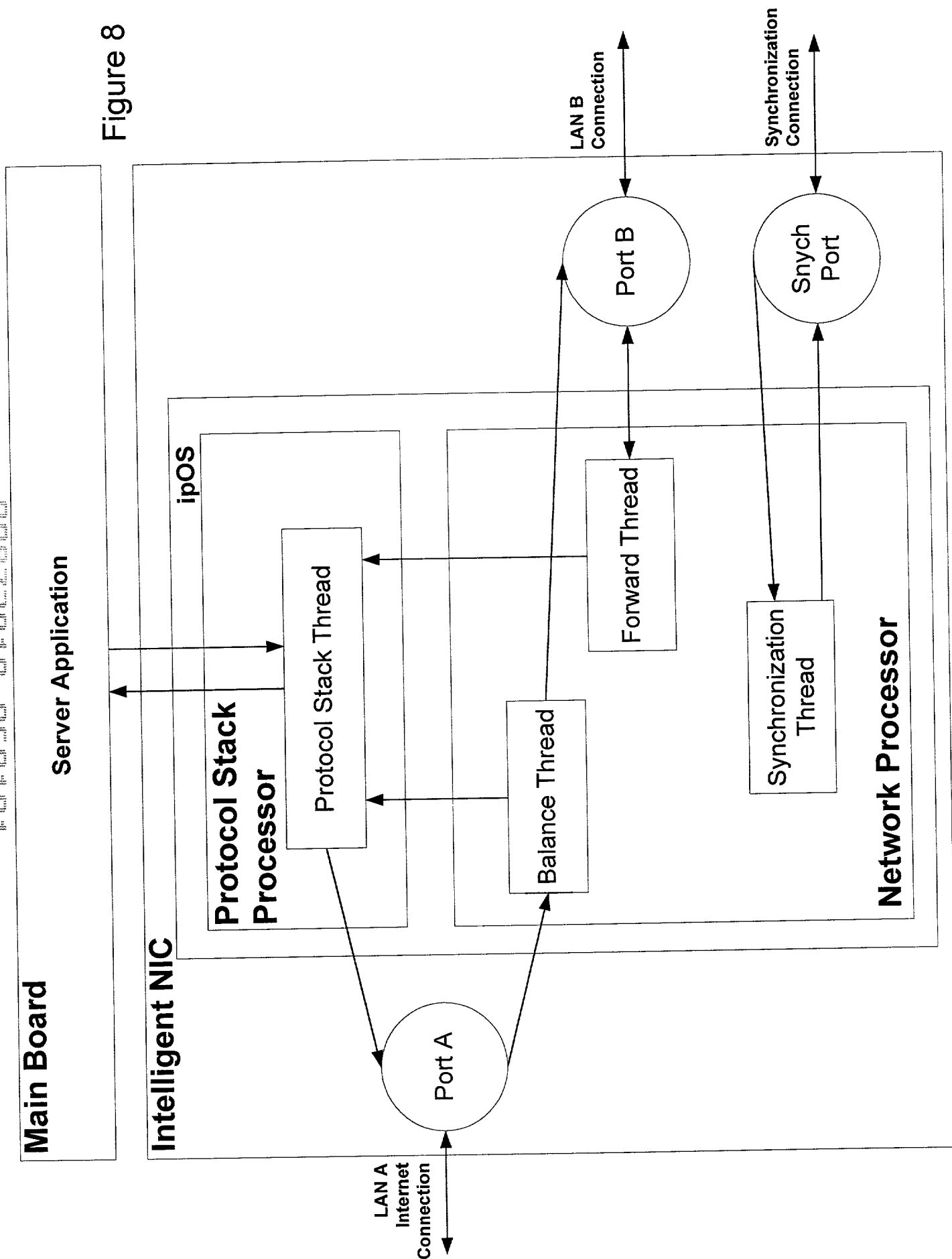


Figure 8

Figure 9a

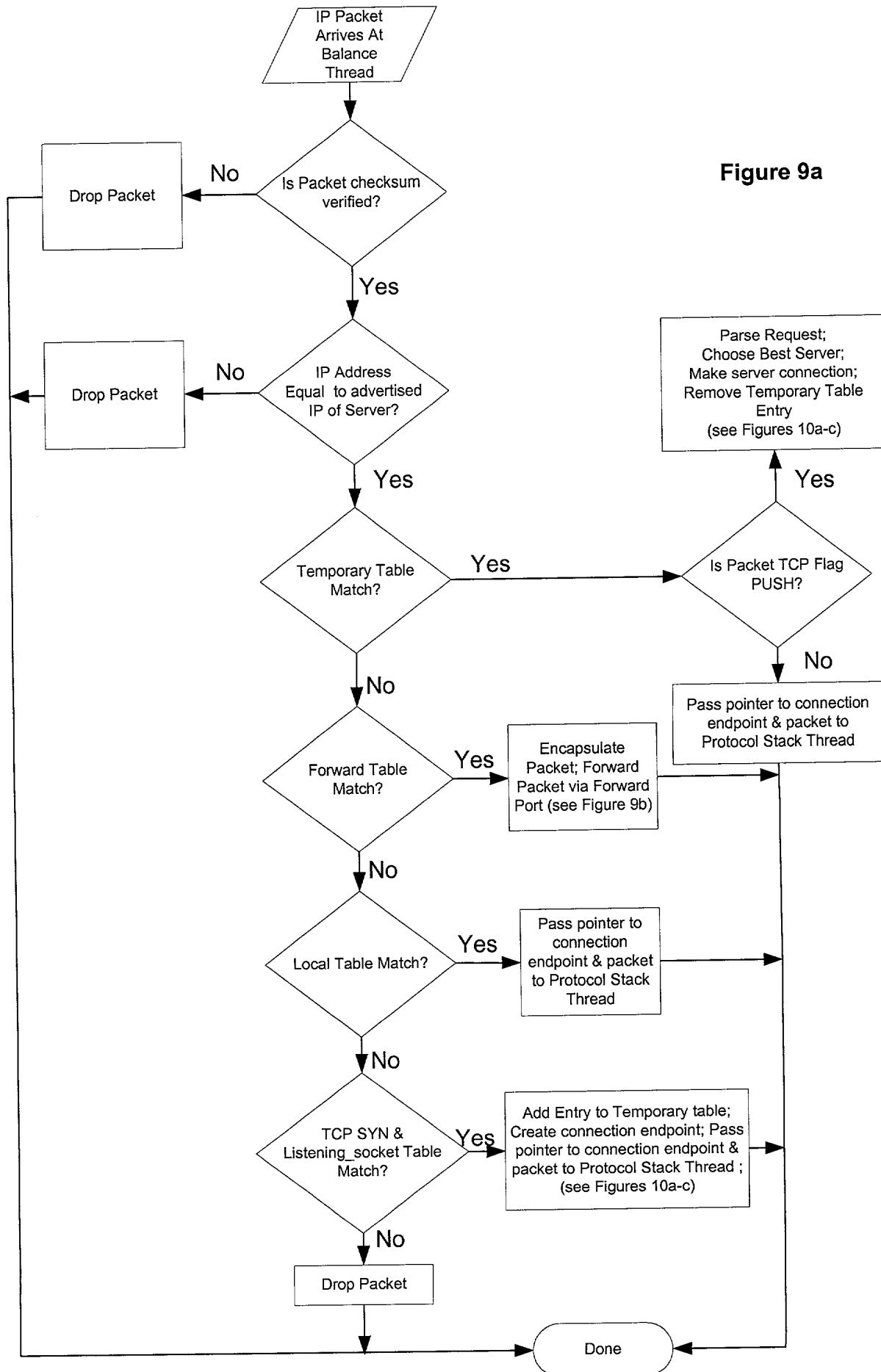
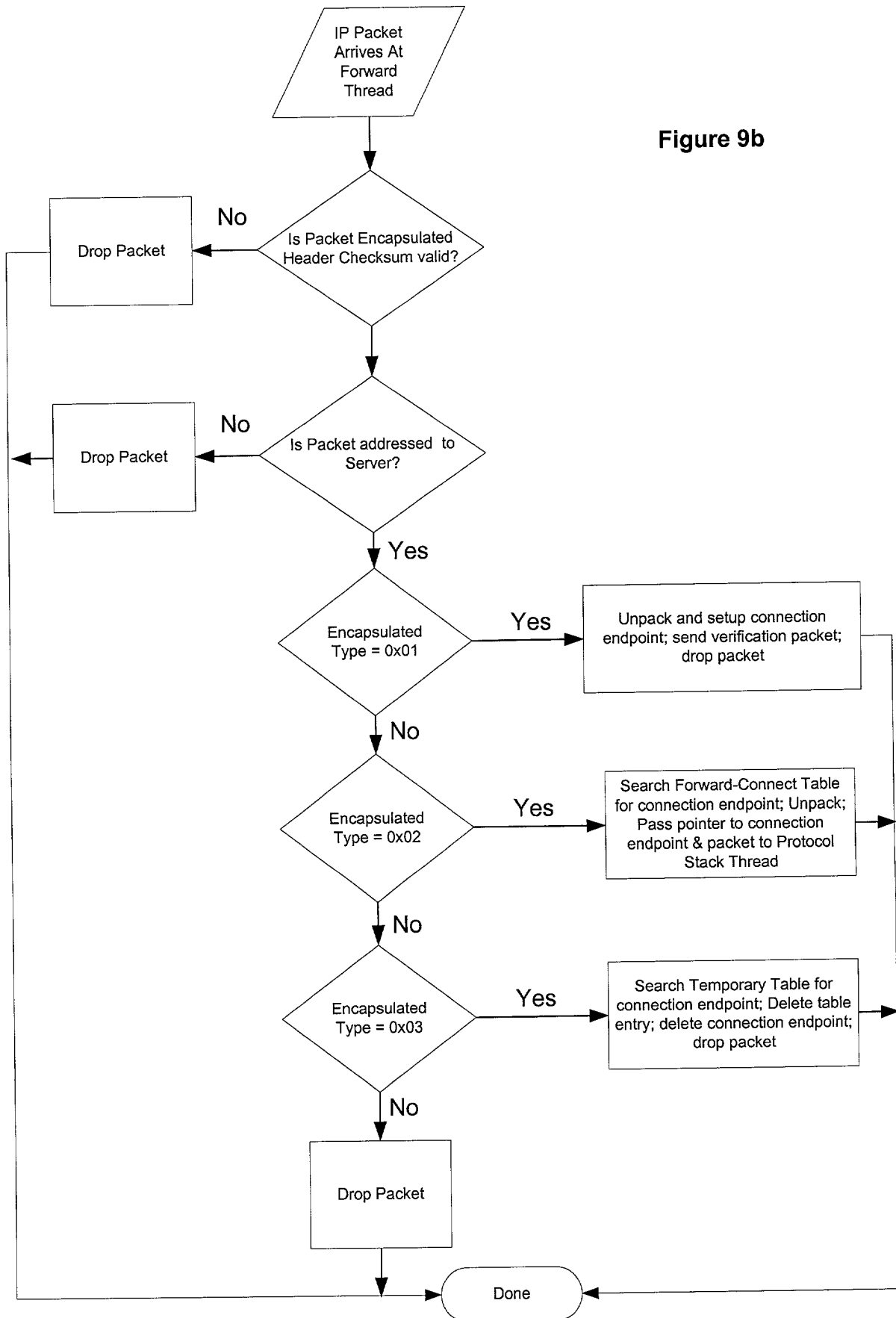


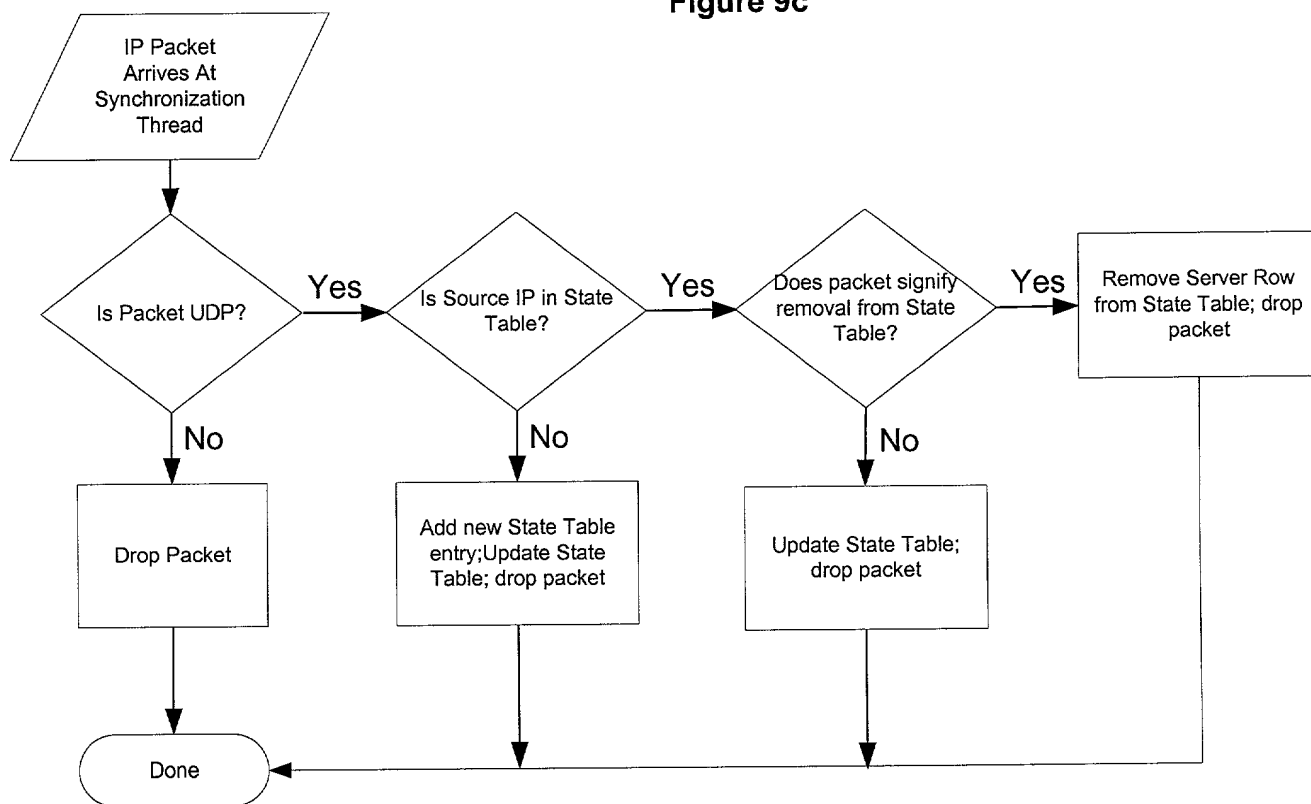


Figure 9b



104690-61062850

**Figure 9c**



Client



ipOS: Balance Thread

ipOS: Protocol Stack Thread

Server Socket Application

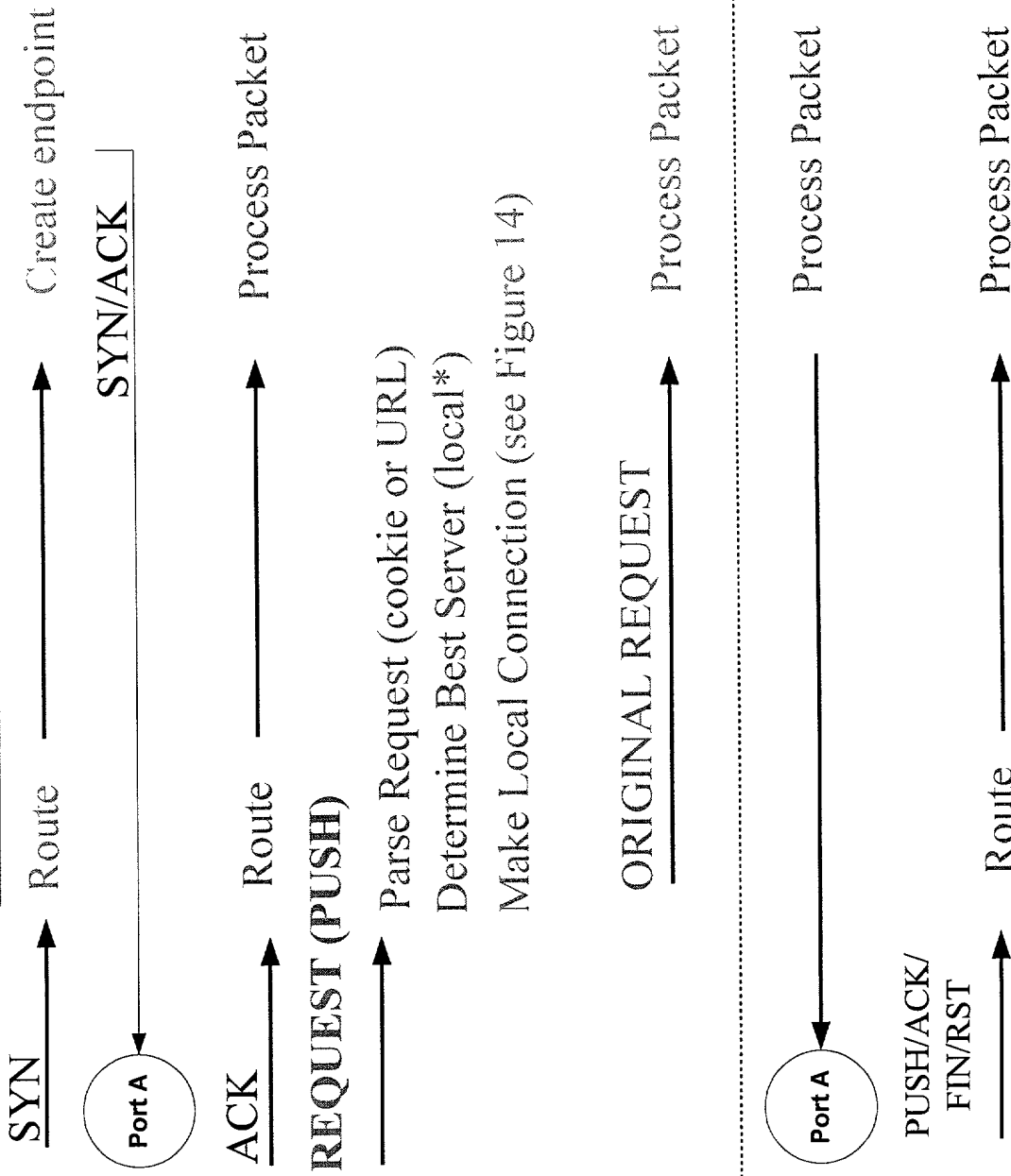


Figure 10a

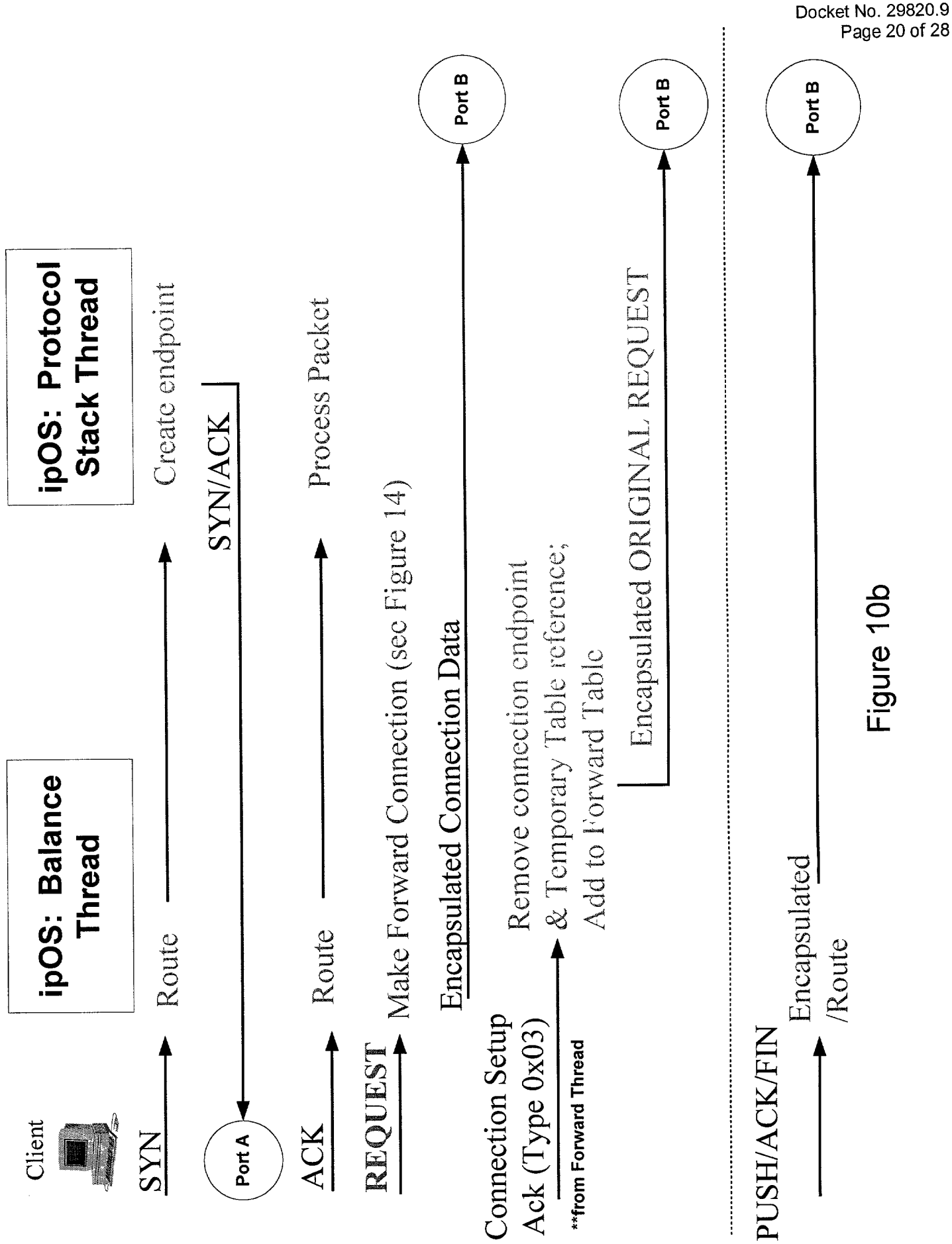


Figure 10b

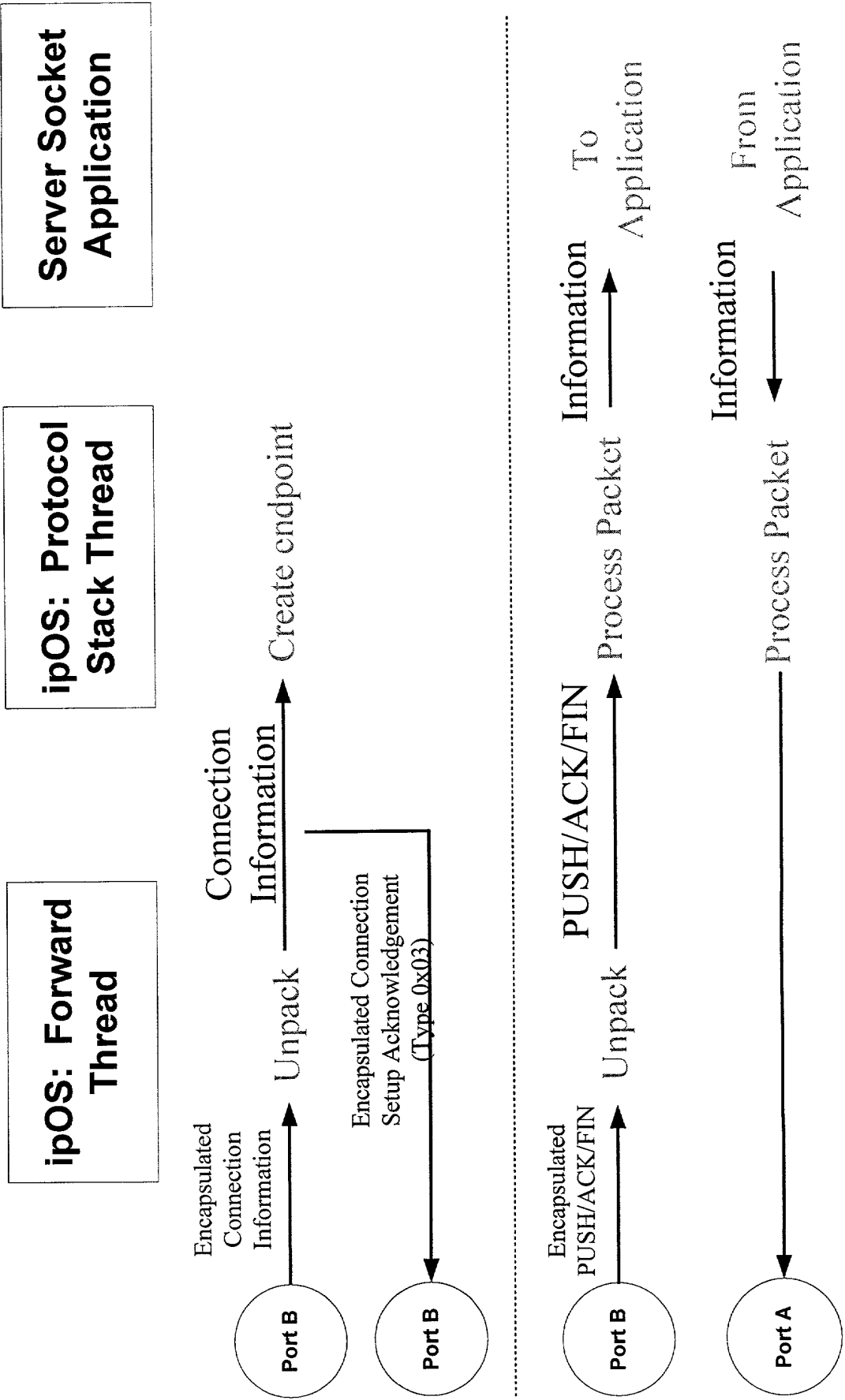


Figure 10c

### Ethernet Encapsulation Header

| MAC Destination Address | MAC Source Address | Type 0x007 |
|-------------------------|--------------------|------------|
| 6                       | 6                  | 2          |

Figure 11a  
(Prior Art)

### ipOS Encapsulation Header

| Source IP | Source Port | Dest. IP | Dest. Port | Type | Protocol | Checksum |
|-----------|-------------|----------|------------|------|----------|----------|
| 4         | 2           | 4        | 2          | 1    | 1        | 2        |

Figure 11b

### ipOS Connection Information (UDP)

| Server IP | Server Port |
|-----------|-------------|
| 4         | 2           |

Figure 11c

### ipOS Connection Information (TCP)

| Server IP | Server Port | TCP Control Block Information |
|-----------|-------------|-------------------------------|
| 4         | 2           | 140                           |

Figure 11d

### ipOS TCP Connection Packet (Type=0x01; Protocol=0x01)

| Ethernet Encap. Type =0x007 | ipOS Encap. Header | TCP ipOS Connection Information |
|-----------------------------|--------------------|---------------------------------|
| 14                          | 16                 | 146                             |

Figure 11e

### ipOS UDP Connection Packet (Type=0x01; Protocol=0x02)

| Ethernet Encap. Type =0x007 | ipOS Encap. Header | UDP ipOS Connection Information |
|-----------------------------|--------------------|---------------------------------|
| 14                          | 16                 | 6                               |

Figure 11f

### ipOS TCP Packet (Type=0x02; Protocol=0x01)

| Ethernet Encap. Type =0x007 | ipOS Encap. Header | IP/TCP Packet |
|-----------------------------|--------------------|---------------|
| 14                          | 16                 | 40 + Data     |

Figure 11g

### ipOS UDP Packet (Type=0x02; Protocol=0x02)

| Ethernet Encap. Type =0x007 | ipOS Encap. Header | IP/UDP Packet |
|-----------------------------|--------------------|---------------|
| 14                          | 16                 | 28 + Data     |

Figure 11h

### ipOS Endpoint Migration Acknowledgement Packet (Type=0x03)

| Ethernet Encap. Type =0x007 | ipOS Encap. Header |
|-----------------------------|--------------------|
| 14                          | 16                 |

Figure 11i

FIG. 11a-11i

**Forward Table**

| Key | Field                  | Description           |
|-----|------------------------|-----------------------|
| Yes | Source IP Address      | IP address of Client  |
| Yes | Source TCP Port        | TCP Port of Client    |
| No  | Destination IP Address | IP Address to Forward |
| No  | Destination TCP Port   | TCP Port to Forward   |

**Local/Forward-Connect/Temporary Table**

| KEY | Field                  | Description                      |
|-----|------------------------|----------------------------------|
| Yes | Source IP Address      | Client IP address                |
| Yes | Source Port            | Client TCP Port                  |
| Yes | Destination IP Address | Endpoint IP Address              |
| Yes | Destination Port       | Endpoint TCP Port                |
| No  | Endpoint Reference     | Reference to Connection Endpoint |

**Server State Table**

| Key | Field                  | Description                 |
|-----|------------------------|-----------------------------|
| Yes | Server IP Address      | Server                      |
| No  | Number TCP Connections | TCP Established Connections |
| No  | CPU utilization        | Main board CPU utilization  |
| No  | Available memory       | Unused memory on Main Board |
| No  | Available Bandwidth    | Unused Bandwidth Capacity   |

**Listening Sockets Table**

| Key | Field             | Description                             |
|-----|-------------------|---|
| Yes | Server IP Address | Server                                  |
| Yes | TCP Port          | Advertised TCP Port                     |
| No  | Process           | Application process advertising IP/Port |

**Application Information Table**

| Key | Field                       | Description                            |
|-----|-----------------------------|--|
| Yes | Process ID                  | Application identification             |
| No  | Process memory requirements | Memory required to run application     |
| No  | Process CPU Utilization     | Measure of application CPU utilization |

**URL Map Table**

| Key | Field             | Description                     |
|-----|-------------------|---------------------------------|
| Yes | URL               | Universal Resource Locator      |
| Yes | Server IP Address | IP address of associated server |

**Cookie Map Table**

| Key | Field             | Description                     |
|-----|-------------------|---------------------------------|
| Yes | Cookie ID         | Cookie Identification tag       |
| No  | Server IP Address | IP address of associated server |

**Figure 12**

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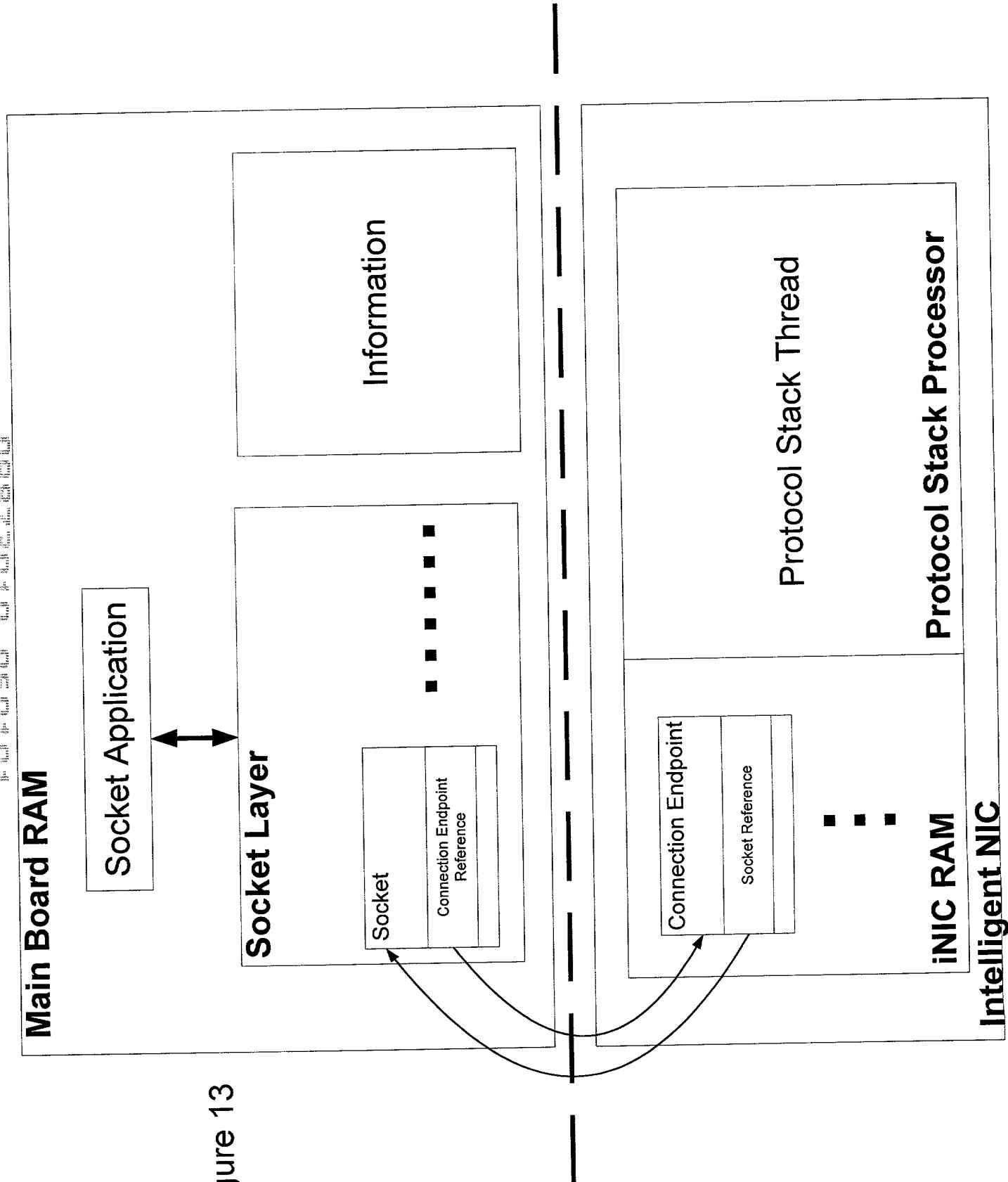


Figure 13



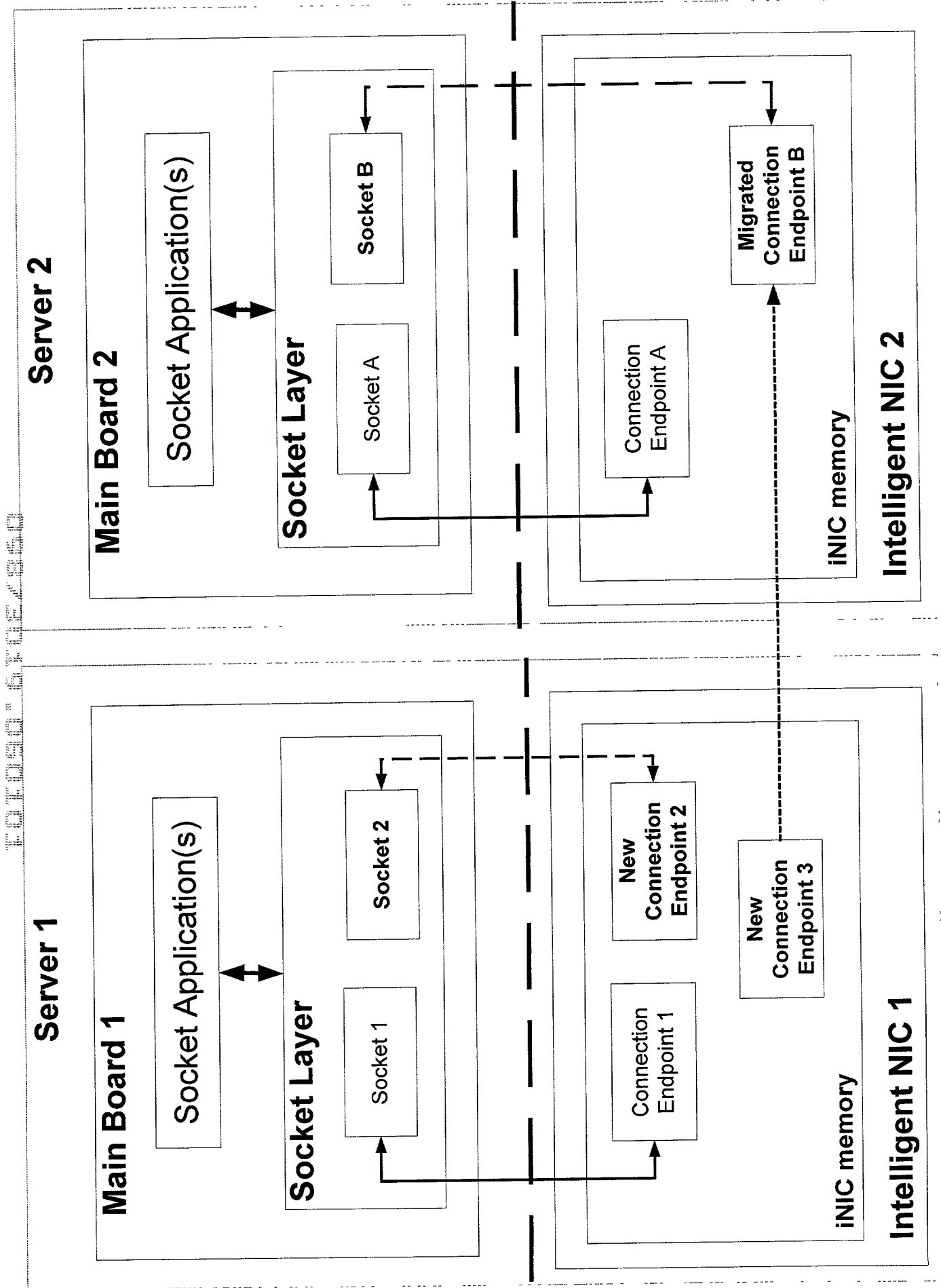


Figure 14

TOP SECRET

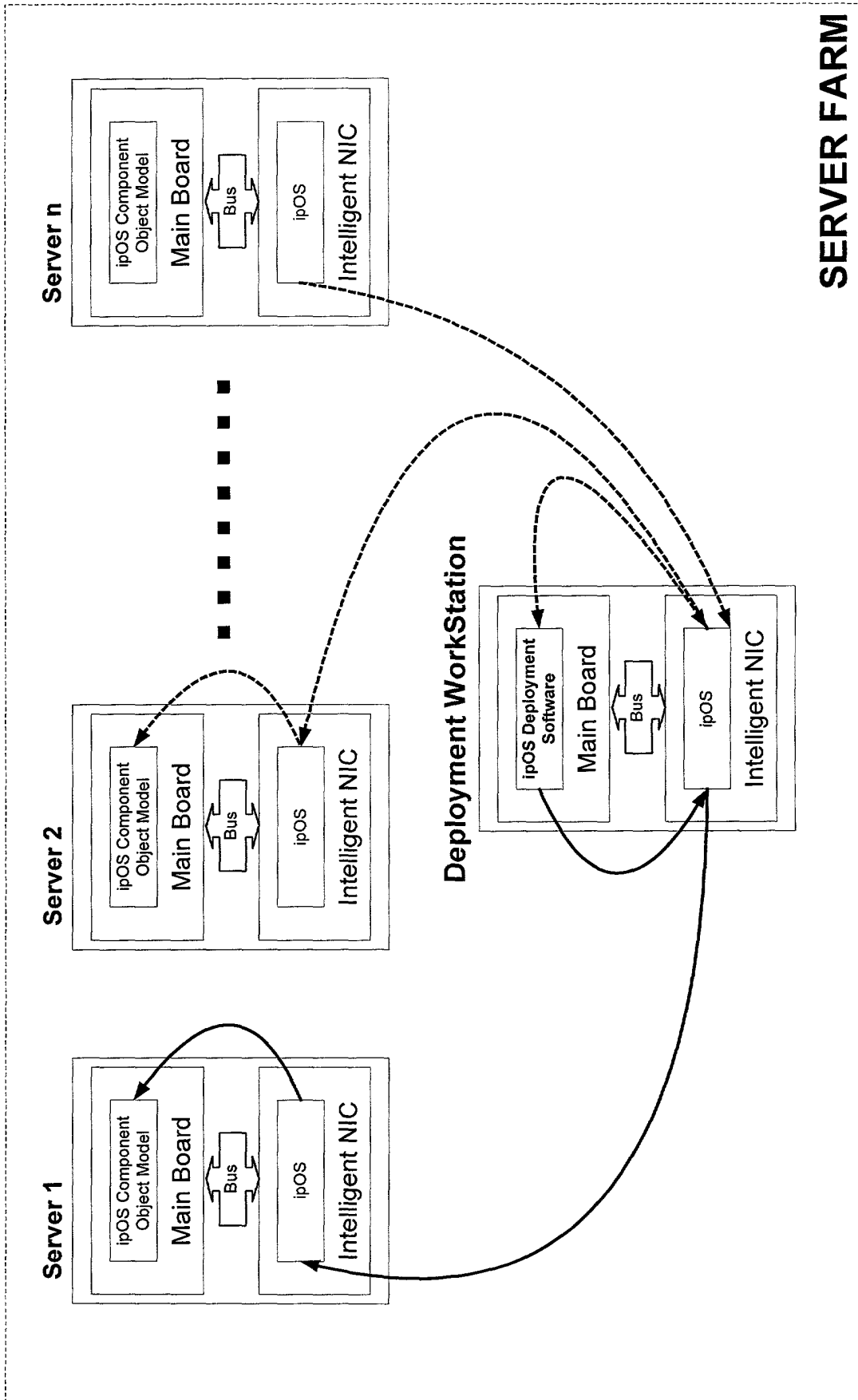


Figure 15

Figure 16

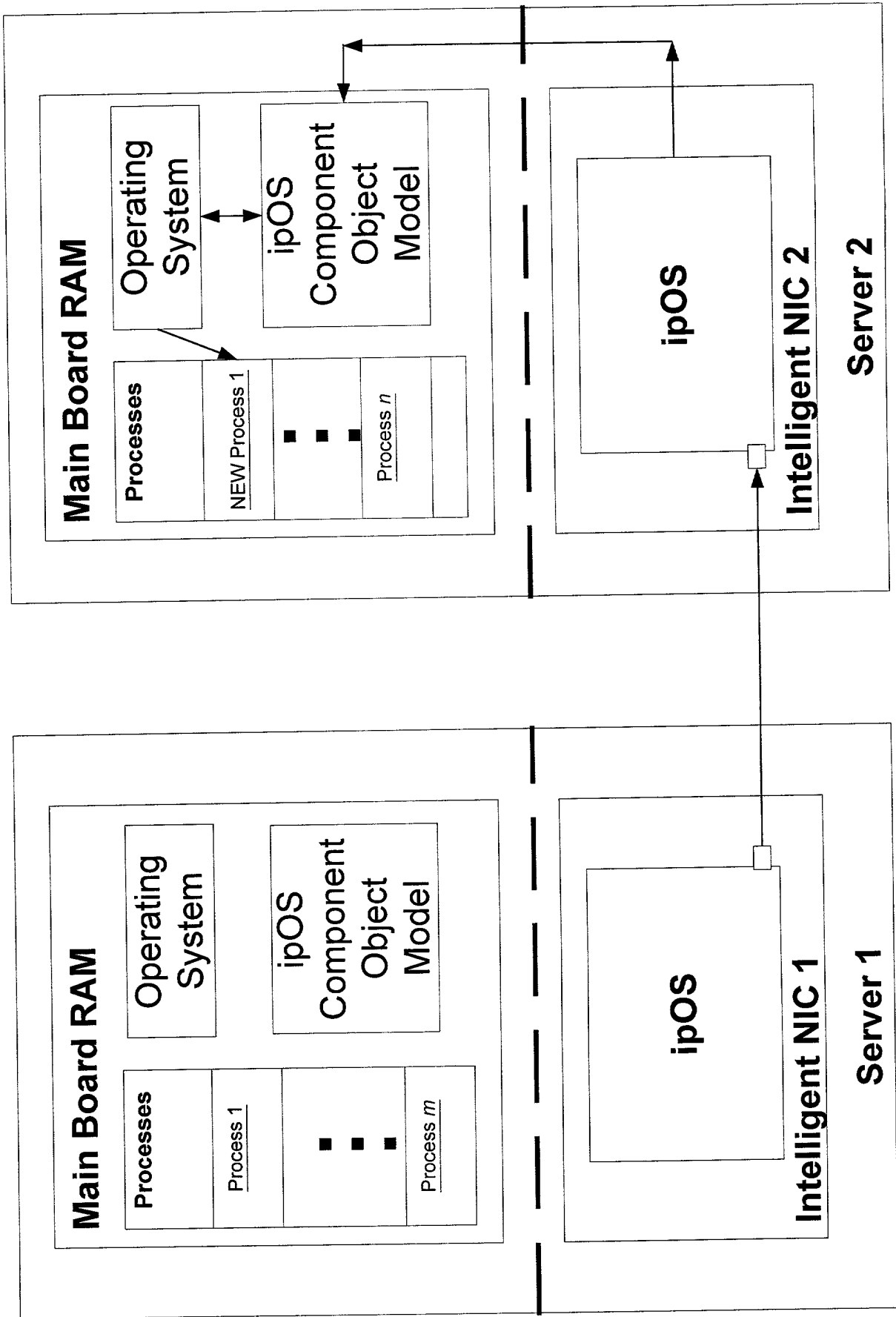


Figure 17

